

REMARKS/ARGUMENTS

The present application contains claims 1, 3-10 and 14-52. Claims 14-52 have been withdrawn as being directed to a non-elected invention. Claims 2 and 11-13 have been canceled without prejudice.

It is noted that a response period of three months has been set for responding to the Office Action. It is submitted that this Amendment has been timely filed.

It is noted that the claim for foreign priority has been acknowledged and that the certified copies of the priority documents have been received.

Making reference to the Detailed Action, it is noted that claims 14-52 stand withdrawn being directed to a non-elected sub-combination, it being understood that the withdrawn claims may be reinstated.

Continued Examination Under 37 C.F.R. §1.114

It is noted that the finality of the previous Office Action has been withdrawn and Applicant's submission has been entered.

Telephonic Interview

Applicant thanks Examiner Entezari for the courtesy of granting an interview. Applicant contacted Examiner Entezari on April 26, 2010 requesting an telephonic interview which was conducted on the afternoon of April 29, 2010. Applicant and Examiner Entezari discussed claim 1 and U.S. Patent Application Publication No. 2002/0164083 to Woo Jin Song, et al., Published November 7, 2002 and briefly discussed U.S. Patent Application Publication No. 2003/0215230 to Andrew C. Gallagher. The details of the interview are set forth below in response to the rejections set forth by the Examiner.

Claim Rejections - 35 U.S.C. §103

Claims 1 and 3-5 have been rejected under 35 U.S.C. §103(a) as unpatentable over Andrew C. Gallagher (U.S. Patent Application Publication No. 2003/0215230) (hereinafter, "Gallagher"), Yasuo Suda (U.S. Patent Application Publication No. 2002/0122124) (hereinafter, "Suda"), Kazuyuki Nako (U.S. Patent No. 5,940,544) (hereinafter, "Nako") and Woo Jin Song, et al. (U.S. Patent Application Publication No. 2002/0164083) (hereinafter, "Song et al.").

Although not specifically stated in the Office Action, it appears that the Examiner intended to reject claims 6 and 8-10 using the same rejection and prior art references employed in the rejection of claims 1 and 3-5.

As a result, the rejection of claims 1, 3-6 and 8-10 under 35 U.S.C. §103(a) as unpatentable over Gallagher, Suda, Nako and Song et al., is respectfully traversed.

The Examiner admits that Gallagher and Suda and Nako do not explicitly disclose that "the distortion correcting range calculating unit calculates the input image range for distortion correction processing on a next block of image data concurrently with execution of the distortion correction processing of a block of image data preceding said next block of image data b[sic] the distortion correcting unit."

It is submitted that claim 1, which contains the above limitation, thus distinguishes over Gallagher, Suda and Nako taken alone.

Song et al. is limited to teaching successively updating a distortion parameter using a technique comprised of steps performed one after the other in serial fashion until the distortion parameter converges to provide an accurate distortion parameter as recited in paragraph [0111] in Song et al.

As was pointed out in the interview, Song et al. in Fig. 4 introduces an undistorted reference image (see Fig. 6A) from generator 28 into the projection TV

200 through switch 22. As the image is processed by units 23, 24-1, 24-2 24-3, picture tube 25 and optical system 26, it undergoes distortion. In order to provide an image which corrects the distortion, typically pin-cushion and/or keystone type distortion, Song et al. employs a camera 27 which captures an image of the distorted reference image (see paragraph [0051], page 3 of Song et al.). The captured image is compared with the reference image at unit 29 and judges if a keystone distortion is present (paragraph [0052], page 3). If the distortion is a keystone distortion, an extractor extracts a keystone distortion parameter. Controller 24-2 warps the image of first frame memory 24-1 using the parameter from memory 24-4, and outputs it to second frame memory 24-3 which transfers the corrected image to CRT 25 (see paragraph [0053], page 3). The above procedure is repeated until any remaining distortion is below a given threshold or there is no distortion remaining.

It is important to note that **none** of the above individual steps in the procedure taught by Song et al. are performed **concurrently with any other step** in the procedure. In other words, there are **no 2 steps** which are performed **concurrently** (i.e., **simultaneously**) with one another. Each of the above steps in Song et al. follow one another in **serial** fashion. Note also Fig. 5A of Song et al. which shows steps S2 through S6 performed in **serial** fashion to correct for keystone distortion, and are repeated until distortion is eliminated or is *de minimus* (note when step S6 is completed the program returns to step S2). The same is also true when correcting for pincushion distortion (note when steps S7-S10 in Fig. 5A are completed the program returns to step S2). Examiner Entezari, please note that there is an error in step S7, the legend "KEYSTONE DISTORTION INCLUDED?" should be corrected to read "PINCUSHION DISTORTION INCLUDED?"

The present embodiment, as recited in claim 1, performs calculating an input image range **concurrently** with a distortion correction processing. These concurrently performed steps are clearly shown at least in Figure 11 (see units 91 and 92) and Figure 14 (see S14) of the present application.

It is further important to note that, in addition to the fact that there are no concurrent operations performed during the Song et al. procedure set forth above, there is clearly no teaching of calculating an input image range **concurrently** with a distortion correction processing.

Although paragraph [0160] at page 10 of Song et al. teaches that controller 24-2 interpolates the frame data stored in first frame memory 24-1 based on the correction information in memory 24-4 and keystone prewarps the image as shown in Fig. 12C and stores the prewarped image according to the pincushion prewarping at the same time, it should be noted that keystone distortion correction and pincushion distortion correction are **not performed simultaneously** as can clearly be seen from Figure 5A wherein **either** keystone distortion correction is performed following step S3 (see steps S4-S6) **or** pincushion distortion correction is performed after step S3 (see steps S7-S10), **but not both**. Also, keystone prewarping and, at the same time, storing a prewarped image frame data generated according to pincushion prewarping in the second frame memory 24-3, neither teaches nor remotely suggests “calculating an input image range **concurrently** with a distortion correction processing.” Incidentally, “prewarping” means that the image is corrected, i.e., “prewarped” to correct “warping” due to CRT 25 and the system optics 26.

Although paragraph [0048], page 3 of Song et al. allegedly teaches that two (2) kinds of distortion are simultaneously corrected, there is no teaching or remote

suggestion of “calculating an input image range **concurrently** with a distortion correction processing.”

Paragraph [0111], page 7 of Song et al. is limited to teaching the serial steps performed to correct for keystone distortion described above (see Fig. 5A steps S3-S6) and repeating these steps “until an accurate keystone distortion parameter is obtained.”

As was further discussed during the interview, even assuming, for the sake of argument, that Gallagher teaches a distortion correcting range calculating unit, there is no teaching or remote suggestion of “calculating an input image range **concurrently** with a distortion correction processing.” In addition there is no teaching of how Gallagher may be combined with Song et al., or the other cited references for that matter, to render claim 1 unpatentable over Gallagher, Suda, Nako and Song et al.

Gallagher and Suda, as admitted by the Examiner, fail to teach sequentially performing distortion correction in units of block image data obtained by dividing image data.

Although Nako subdivides the picture into multiple blocks, there is no teaching or suggestion of performing distortion correction range processing on the divided blocks to calculate an input image range necessary for distortion correction processing.

For the above reasons, it is submitted that claim 1 patentably distinguishes over Gallagher, Suda, Nako and Song et al.

Claims 3-6 and 8-10 all depend from claim 1 and carry all of its limitations and are thus deemed to patentably distinguish over Gallagher, Suda, Nako and Song et al.

Claim 7 has been rejected over Gallagher, Suda Nako and Song et al. and further in view of Hiroyuki Suzuki et al. (U.S. Patent No. 6,801,671) (hereinafter, "Suzuki et al.") This rejection is respectfully traversed.

Claim 7 depends from claim 1 and is submitted to distinguish over Gallagher, Suda, Nako and Song et al., taken alone. Suzuki et al. is lacking in the features lacking in Gallagher, Suda, Nako and Song et al. taken alone and for these reasons it is submitted that claim 7 patentably distinguishes over the combination of Gallagher, Suda, Nako, Song et al. and Suzuki et al.

In view of the foregoing, it is submitted that claims 1 and 3-10 are patentable over the cited prior art and reconsideration and allowance are respectfully requested.

It is also respectfully requested that the Examiner reconsiders whether claims 14-52 should be reinstated as directed to the subject matter of claims 1 and 3-10.

Applicant: Higurashi et al.
Application No.: 10/566,408

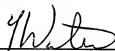
Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a further telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing remarks, Applicants respectfully submit that the present application, including claims 1 and 3-10, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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